

WHAT IS CLAIMED IS:

1. An optical signal processor comprising:

a first diffraction grating device for diffracting light inputted;

5 a second diffraction grating device for diffracting the light diffracted by the first diffraction grating device; and

10 first and second half-wave plates, disposed on an optical path between the first and second diffraction grating devices, having respective optic axes in directions different from each other by 45 degrees.

2. An optical signal processor according to claim 1, wherein the first and second diffraction grating devices are arranged parallel to each other.

15 3. An optical signal processor according to claim 1, wherein the first and second half-wave plates are arranged orthogonal to an optical axis of light having a center wavelength in a wavelength band in use.

20 4. An optical signal processor according to claim 1, wherein a mirror is disposed on the optical path between the first and second diffraction grating devices; and

wherein the first and second half-wave plates are disposed on an optical path between the first diffraction grating device and the mirror, or on an optical path between the second diffraction grating device and the mirror.

25 5. An optical signal processor according to claim

4, wherein the mirror is arranged parallel to the first or second diffraction grating device.

6. An optical signal processor according to claim 4, wherein the first and second diffraction grating devices are integrated with each other.

7. An optical signal processor according to claim 1, wherein the first and second diffraction grating devices have the same grating direction.